Health Consultation — Glynn County

Arco Quarry
February 4, 2008

Introduction
In June 2004, residents living in Brunswick, GA requested that the Agency for Toxic Substances and Disease Registry (ATSDR) investigate whether fish consumed from Arco Quarry contained contaminants from a nearby hazardous waste site. In response, a health consultation was prepared by the Glynn County Health Department (GCHD) and the Georgia Division of Public Health (GDPH), under a cooperative agreement with ATSDR. The GCHD collected and reviewed fish tissue samples from Arco Quarry to determine whether they contained contaminants at levels of health concern.

Site Description and History
The Arco Quarry is a man-made impoundment in Brunswick, Georgia. The Quarry is located off Ross Road and bordered to the west by the Altamaha Canal, to the North by the former LCP Chemicals facility, and by the Arco neighborhood to the South and East. It was formerly a gravel quarry dug in the 1970s, and has since filled with water and evolved into a recreational fishing site. Arco Quarry is approximately six acres in size and hosts a diverse array of both fresh and marine fishes. Measurements using a salinity meter show the Quarry to be fresh water (≤ 5 parts per thousand salinity). It is fed primarily by ground and storm water, but is also prone to periodic mixing with brackish water from the Turtle River during flood conditions and/or high tidal surges from the Altamaha Canal. This mixing is the source of salt and brackish water fish in the Quarry. Fresh water fish are from natural ecological deposition (e.g., birds transporting eggs). Seasonal fish catches reported by anglers include bluegill, catfish, mullet and a variety of croaker.

Over the last century, areas of the Brunswick peninsula and Turtle River Basin have been impacted by industrial operations that released toxic chemicals into the environment. Identifying and minimizing human exposure to residual industrial contamination is an ongoing activity for targeted areas around Brunswick by federal, state, and local environmental and public health agencies, and the public. At this time, there is little active fishing from Arco Quarry.

Environmental Sampling
Composite tissue samples were collected from bluegill and mullet specimens using cross sections from both the thoracic and caudal regions after scaling and gulleting. The viscera were removed along with heads in a manner taking care not to disrupt the organs. One composite for each species was collected submitted in aggregate proportions with instructions for the laboratory to combine all submitted tissue for each sample prior to homogenization. Bluegill and mullet samples included tissue from the skin, muscle and fins. Catfish samples were comprised of sagital sections that included the skin, but omitted the main skeletal bones. One catfish roe sample, comprised of the entire egg mass and sac, was also submitted.

Pre-cooled tissue samples were wrapped in protective plastic sheeting to prevent breakage, placed in a cooler, iced (wet ice in plastic bags), and the cooler sealed prior to overnight shipment to the laboratory.

Results
Fish tissue samples were analyzed for lead, mercury, and PCBs using EPA methods. The highest level of a contaminant detected was mercury. However, the highest level of mercury found, 0.579 parts per million (ppm) in catfish fillet, is well below the U.S. Food and Drug Administration's action level of 1 ppm. This level of mercury found in catfish is nearly twice as high as the next highest level of mercury found (0.35 ppm in pan fish).Lead and one PCB (1268) were found well below action levels.

Mercury is a contaminant of concern in fish throughout Georgia and throughout much of the world. This is due to the various sources that include discharge to water bodies and air deposition from industries such as coal-fired electric power plants. Mercury occurs naturally in several different forms. The most toxic form of mercury in fish is organic methylmercury. Methylmercury is converted from inorganic (metallic) mercury by microorganisms that are present in the environment. It has been established that more than 99 percent of all mercury in fish is methylmercury.

Conclusions

GDPH has determined that this site poses a ***public health hazard*** to sensitive populations who should restrict consumption of certain species. Human exposure to contaminated fish has occurred, is occurring, and may occur in the future, but the exposure is below a level of health concern for the general population. One contaminant, mercury, is present in catfish and pan fish at levels that suggest that pregnant and nursing women, young children, and women of childbearing age should limit their consumption of these species according to the fish consumption guidelines issued for the area.

Recommendations

GDPH recommends that:

- Sensitive populations limit their consumption of catfish to one meal per month and for pan fish, one meal per week.
- Consumers should exercise caution and assure that children follow the fish consumption guidelines for sensitive populations.
- The Glynn County Health Department should provide fish consumption guidance brochures to residents of the Arco Neighborhood and the general public.